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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,382	07/20/2001	Clemens Ruck	US20 00 3003	2313

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EXAMINER
LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/910,382	Applicant(s) RUCK ET AL.	
	Examiner Arnel C. Lavarias	Art Unit 2872	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/6/03, 6/24/03* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 May 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/6/03 in Papers No. 11 and 12 have been entered.

Drawings

2. The drawings were received on 5/6/03 in Paper No. 11. These drawings are acceptable.

Response to Amendment

3. The amendments to Claims 1, 6, 10, and 13 in Paper No. 12, dated 5/6/03, are acknowledged and accepted.

Response to Arguments

4. The Applicants argue that, with respect to Claims 1, 6, and 13, Knowles et al. fails to teach or reasonably suggest a wavemeter wherein a telecommunication window of the

wavelength-dependency is approximately 1500-1600 nm. The Examiner agrees, and respectfully withdraws the rejections to Claims 1-20 in Paper No. 10, dated 2/24/03.

5. Claims 1-20 are rejected as follows.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 6, and 13 recite the limitation 'wherein a telecommunication window of the wavelength-dependency is approximately 1500-1600 nm'. It is unclear from this recitation whether the wavelength-dependency of the reflection and/or transmission of the materials is 1500-1600 nm in wavelength bandwidth, or that the wavelength-dependency of the reflection and/or transmission of the materials has a wavelength bandwidth that has endpoints at approximately 1500 nm and at 1600 nm (thus having a wavelength bandwidth of about 100 nm). The Examiner has taken the second interpretation, as per the Applicants' specification of the disclosure. Claims 2-5, 7-12, 14-20 are dependent on Claims 1, 6, and 13, and hence inherit the deficiencies of Claims 1, 6, and 13.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-2, 5-10, 13-19, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Knowles et al. (U.S. Patent No. 5991324), of record, in view of Derickson (D. Derickson, 'Fiber optic test and measurement', Prentice-Hall, New Jersey, 1998, pp. 131-168).

Knowles et al. discloses a wavemeter, software product, and method for determining a wavelength of an incoming optical beam (See 20 in Figure 2; Figure 6; Figure 10; col. 9, line 20-col. 11, line 29) comprising a coarse-measuring unit for determining in a first wavelength range and with a first accuracy, a first wavelength value as representing the wavelength of the incoming optical beam (See 76 in Figure 10); a fine measuring unit for providing a wavelength determination with a second accuracy for the incoming optical beam, wherein the wavelength determination is ambiguous within the first wavelength range but unambiguous in each of a plurality of unambiguous wavelength ranges, so that a plurality of different wavelength values correspond to a measuring value as measured by the fine-measuring unit for the incoming optical beam and wherein the second accuracy is higher than the first accuracy (See 84 in Figure 10); an evaluation unit for determining a second wavelength range covering the first wavelength value, and for determining a second wavelength value as the one of the plurality of different wavelength

values that corresponds to the measuring value in the second wavelength range (See col. 9, line 20-col. 11, line 29); and output means for providing the second wavelength value as measuring result of the wavemeter representing the wavelength of the incoming optical beam (See col. 9, line 20-col. 11, line 29); wherein the coarse-measuring unit comprises one or more materials having a wavelength-dependency of reflection and/or transmission See 76 in Figure 10). Knowles et al. further discloses the fine-measuring unit comprising means for providing a periodic wavelength dependency (See 84 in Figure 10); the wavemeter further comprising an absolute-measuring unit having unambiguous wavelength properties (See 90 in Figure 10); and providing a reference measurement being executed prior to determining in a first wavelength range and with a first accuracy a first wavelength value, for calibration before an actual measurement; wherein providing a reference measurement comprises sweeping an input signal over a wavelength range and analyzing a measuring result derived from sweeping an input signal over a wavelength range (See 90 in Figure 10; col. 11, lines 9-29). Knowles et al. lacks a telecommunication window of the wavelength-dependency of reflection and/or transmission of the material being approximately 1500-1600 nm. It is well-known in the art of accurate wavelength measurement technology to utilize wavemeters in the optical telecommunications wavelength band (i.e. between approximately 1500-1600 nm), and further to adjust not only the material, but the angular position of the coarse measuring unit (i.e. the grating 76 in Figure 10), such that the coarse measuring unit is usable in the near infrared region of approximately 1500 –1600 nm where the 'optical telecommunications window' lies and exhibits a wavelength-dependency in this window.

Further, the Examiner notes that, as previously stated, all materials inherently have wavelength-dependent reflection and/or transmission properties, even in the optical telecommunications window. Finally, Derickson teaches the use of wavemeters in the optical telecommunications window (and hence utilize materials having a wavelength dependency in the reflection and/or transmission that lies in the wavelength range of 1500-1600 nm), and provides various examples (See for example Sections 4.6.1, 4.6.2, 4.6.3, and 4.6.4) that may be substituted for the grating-based coarse measuring unit of Knowles et al. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the wavemeter of Knowles et al. utilize a coarse measuring unit comprising materials, wherein a telecommunication window of the wavelength-dependency of reflection and/or transmission of the material is approximately 1500-1600 nm, as taught by Derickson, for the purpose of providing an extended wavelength measurement range.

10. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knowles et al. in view of Derickson as applied to Claims 1, 6, 13 above, and further in view of Cargill et al. (U.S. Patent No. 5515169), of record, and Fowles (G. R. Fowles, 'Introduction to modern optics', Dover Publications, New York, 1968, pp. 96-99), of record.

Knowles et al. in view of Derickson discloses the invention as set forth above in Claims 1, 6, 13, except for the coarse-measuring unit comprising a glass plate with a dielectric coating having one or more layers of materials, chosen from the group of MgF_2, SiO, or CeF_3, on one side and an anti-reflection coating on another side, thus representing

a wavelength-dependent beamsplitter. However, Cargill et al. teaches a spectral wavelength discrimination system for accurately determining the wavelength of a beam of radiation (See Figure 2C) wherein the system utilizes a wavelength-dependent beamsplitter (See 34 in Figure 2C), such as a glass plate with alternating layers of SiO and TiO (See col. 5, lines 1-59; Figure 3; Table 1). Additionally, Fowles teaches that anti-reflecting films can be formed on a glass substrate surface, such as on glass lenses, to reduce the amount of light reflected from the glass surface (i.e. anti-reflecting films). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a wavelength-dependent beamsplitter made for example from a glass plate with alternating dielectric layers and an anti-reflecting film, as taught by both Cargill et al. and Fowles, in the wavemeter for determining a wavelength of an incoming optical beam as disclosed by Knowles et al. in view of Derickson. One would have been motivated to incorporate a wavelength-dependent beamsplitter to reduce the system cost since such beamsplitters are inexpensive. One would have been motivated to provide an anti-reflecting film on the wavelength-dependent beamsplitter to increase the overall optical throughput of the system, thus increasing signal-to-noise ratio and wavelength determination accuracy.

11. Claims 11-12, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knowles et al. in view of Derickson as applied to Claims 1, 6, and 13 above, and further in view of Vry et al. (DE4114407A1), of record.

Knowles et al. in view of Derickson discloses the invention as set forth above in Claims 1, 6, 13, except for determining the second wavelength range as a wavelength

range around the first wavelength range, wherein the second wavelength range is determined by adding and subtracting a value corresponding to half of the period of the unambiguous wavelength range covering the first wavelength value, to and from the first wavelength value. However, Vry et al. teaches a method for determining unambiguously the exact wavelength of a beam (See Abstract; Figure 1) by determining a first coarse wavelength range using measured properties of air, then determining a second wavelength range from the first wavelength range based on the measured and calculated characteristics and free-spectral range of the Fabry-Perot interferometer (See Page 3, line 9-Page 4, line 9). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine the second wavelength range as a wavelength range around the first wavelength range, as taught by Vry et al., in the wavemeter and method for determining a wavelength of an incoming optical beam as disclosed by Knowles et al. in view of Derickson. One would have been motivated to do this to provide increased accuracy of the wavelength of the beam of light under test.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Arnel C. Lavarias
9/4/03

Thong Nguyen
Primary Examiner